Newsletter

July 2016

I received a rather disturbing Email from one of our members which was discussed in detail at our last committee meeting.

One item brought up by this member was that he had seen novice members flying without supervision. It must be made absolutely clear, this is against the Club rules. If you look on the Club's website, it clearly states in the Rules that:- *novice flyers can only fly when directly supervised by a competent flyer* - it then goes on to explain what a competent flyer is:-

Club Examiners or Instructors *or*
BMFA 'B' certificate holders *or*
Members who have held the BMFA 'A' certificate for at least 12 months.

Another item that he brought up concerned a dog walker allowing his dog to foul the flying field. The perimeter of our flying field is accessible to walkers with or without their pets - it is for this reason that for safety, always fly with a lookout at your side - it is his/her job to watch out for walkers.

If however, a walker (or their pet strays onto the field) their safety is paramount - fly away from them - never over them - get your lookout to ask them to get off the strip (in a polite and friendly manner!). Emergency situations do of course inevitably occur - you may have a deadstick situation. Nevertheless, the safety of the public comes first - not your model. The Email went on to say that it should not be an ordinary member's responsibility to 'Police' the site. Well, I'm sorry to say that it is absolutely your responsibility - if you are flying a model aircraft, you take on a responsibility to make your flight safe not only for your fellow members but also for any member of the Public even if they appear to be acting in an irresponsible way.

Another rather worrying report we had from two other members concerned the unfriendly attitude shown at the field. This Club encourages all forms of radio controlled flying. This could be gliders with or without motors, fixed wing aerobatic, scale, sport, foamies, stick built, vintage powered either by propellor using electric, petrol, diesel or glow fuel whether 2 stroke or 4 stroke and with as many cylinders as you want! Finally gas turbines and rotary winged machines. Everyone has <u>equal</u> status. There are certain sensibilities - it would be stupid to mix the flying of a fast aerobatic model with say a helicopter or a glider. Just use your brains and enjoy the sport in a safe manner. I will now step down from my soapbox.

Congratulations go to Steve Warburton - Steve has worked hard to get his 'A' certificate and sure enough it all happened for him on July 6th. Steve has become a keen indoor flyer and we've watched him improve steadily. Well done and thanks to Jason for the photos.

I've been working on the Junior 60 and it's about there. I'm a bit disappointed at the amount of lead I had to put in the nose to achieve the correct C of G.

It means that I'll need to fit a more powerful motor or perhaps power it with a 4S pack.

So How Did It Fly?

Photos by Dave Swarbrick

I'm really sorry I wasn't there to see it but Dave and Jason went to the field, wound up the elastic bands or whatever it is that makes these gas turbines make such a lovely sound and off it went - the new Grumman Panther flew. Dave took pictures to record the event and judging from what he took, the flight went superbly.

A low pass on it's maiden flight - piloted by Jason

I asked Jason some time later about the flights he made and he said it flew just like the slightly larger one which Dave flies. All I know is that it looks just amazing - I so love the shape of that Panther - it's one of those planes that look just right.

Any of you lucky enough to be going to Cosford will see the pair flying at the show together for the first time. Thanks for all those pictures Dave.

A VIEW FROM THE HEDGE. (By Will Sparrow)

Many years ago a feathered philosopher, from a far distant land, way to the east, one Vladimir Ilyich Lenin-Sparrow said “there are decades when nothing happens… and there are weeks when decades happen”. How right he was. Regular readers (?) will remember, from a few months ago, the turmoil generated in this hedge regarding our membership of the Hedge Union. Well, we had our vote and this hedge decided to leave. We can never know if the decision we made was the right one but we feel well able to run our own affairs. Our hedge is now run by a trusted group of sparrows with a feisty hen at the helm. I recall the words of Horatio Nelson-Sparrow echoing down the years “the boldest moves are often the safest”. I hope that he still proves to be right!

The solstice has now passed, the nights are drawing in and the building season is starting to appear on the far horizon. By the way, I hope that you all, in tune with nature as you undoubtedly are, managed to see the “strawberry moon” – the full moon that coincided with the summer solstice. If you missed it you are unlikely to see another one as such moons only occur every fifty or sixty years! At this time of year the corn is as high as an elephant’s eye… so you had better not crash in the nearby fields. One member recently had the misfortune to suffer a complete battery failure with the inevitable result that the model crashed into a nearby cornfield. The wreckage was eventually found but it took the search team a considerable time to locate it. I believe that some of you have taken out insurance in the form of electronic locating devices. Insurance is a strange thing; you never need it until you need it!

I was away from my usual perch the day that the track was fettled, so it came as a surprise to see it done and dusted upon my return. The track will never have a surface like a billiard table but it is now a good deal better than it was. The infrequent flyers amongst you (Have you been fitted with your “Modellers’ Magic Wrist Bands yet”?) will no longer be able to site muddy tyres as an excuse for not bringing your new Bentley, and its load of models, down to the field.

A VIEW FROM THE HEDGE Continued/…….

July was all set to be, like many a July before it, dominated by wind and rain… and then she surprised us and delivered the typical British summer – two scorching days followed by a thunder storm! Admittedly, the two scorching days did not coincide with a weekend, but I was expecting a decent turn-out of your retired members and those not tied to work schedules dictated by others. So what did I get to reward me for the many hours I spent on my viewing twig? The answer is a couple of stalwarts on the Monday afternoon (another member did turn up but his model was not working as it should, forcing him to retire from the field, model un-flown) and just the one on the Tuesday morning who seemed to be doing a spot of schedule practice.

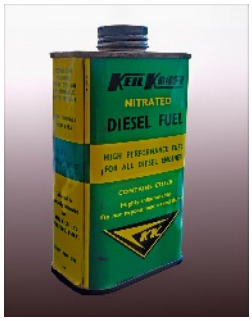
The nesting season is now all but over and many a sparrow (but not me!) is worn out with the effort. (I was once called "A feathered sex god" and the reputation seems to have lingered). With the ending of domestic duties I will now have more time to watch you modellers enjoying yourselves. I hope that you will not disappoint me; there are decades when nothing happens… and weeks when nothing happens either!

WS

And Now for Something Nostalgic - the Niff of Diesel

Hi Peter,

The funny thing is that the half pint can would last us at least two weeks, that's if we were really hammering it!
But I did once during school holidays use half a pint in one week, I was flying a Veron Nipper with a .75 cc D.C. Merlin, it went like stink!



The picture on the left is the "Nipper" and for the uninitiated the picture on the right is what your building bench looked like during construction, yes they are real balsa shavings.

John P.

Hanger 9 Valiant Review

Article and pictures by Chris Vernon

Before I start my intention is not to ram electric flight down your throat. It is purely down to choice. I fly electric due to the convenience of it, no mess, no smelly car. I have had petrol engines in the past and do still own some, perhaps one day I will use them again, I very nearly did buy one for this model.

So the Hanger 9 Valiant, basically a big trainer, a plane that simply flies around at a sedate pace or a fast pace if you open the throttle and a tad aerobatic (of a sort) if you so wish.

I had been looking at this aircraft a while (dithering about as Mrs V says), weighing up the options only to find somebody else in the club and bought one. Ah well still a nice plane so I ordered one from the Propguy. Ten days later I got a message that a chuffing big box had arrived at his unit and needing picking up and paying for !!.

Whilst waiting for the said box to arrive I had been pondering how to power the plane. I had inclines of putting a DLE 40cc twin in it and there was video footage of such a set up. This particular engine is a nice compact twin but a bit pricey. I had spoken to the official agent in Wales about this engine and he had been very honest in informing me that the dB output was a tad high for noise sensitive areas. He then told me for an extra circa £200 he could reduce the dB output with different silencers ------ I bet he could, decision made electric power it was.

Hanger 9 do provide information on an electric setup for the model, this is based on an eflite motor running off 10s lipo (2X 5s in series). I currently do not have any other model running off high capacity 5S lipo's so a quick discussion with John Higgins and the use of his special calculator resulted in a 12s setup (2 X 6s in series). The emerging details were a Turnigy Rotomax 160 motor (30cc equivalent), a Turnigy dlux 80amp controller and a 19X10 prop running on 12S, theoretical output 2.8kw pulling 65amps @ 7500rpm.

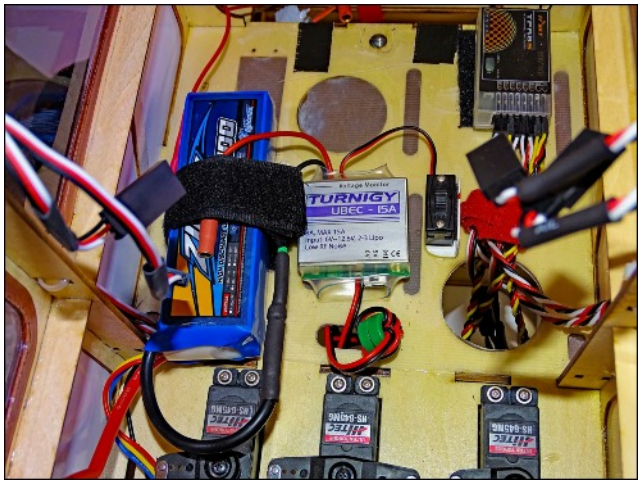
Hanger 9 Valiant Review

Article and pictures by Chris Vernon

Armed with this information I then had a few frustrating weeks waiting for stock to arrive at HobbyKing. The motor was out of stock, the ESC was in stock in the south pole and the batteries were still being mined for their earth elements. I subscribed to the stock alert with HobbyKing, a waste of time. It was by pure chance that John Higgins noticed they were in stock after waiting for weeks, a quick check, yes motor in stock, ESC in stock, batteries back order !!! I decided to order them any how as I needed them.

So to the plane. Not a box to smuggle into the house without being found out, it was huge and not a £3.95 modelling part (thinks have gone up, everything was £2.50 for years) This is the first Hanger 9 ARTF I have purchased and I would put it on par with the Sebart range of models, nice construction covered in Profilm and good quality hardware pack. If I had to be critical about a couple things they would be the mix of metric and American gas board threads in the pack, they certainly are a strange thread !!! and some bubbles in the covering which are reluctant to iron out and reappear when the sun gets on them.

Whilst waiting for the motor and other components I had purchased the fairly heavy duty/torque Hitec servos from Leeds Models. These are non-digital servos but as it is basically a trainer I decided not to spend the extra money on digital servos.



An afterthought was the purchase of the 'Tundra' undercarriage which turned out to be the undercarriage off the Hanger 9 scale cub. This was a fairly costly upgrade which is supplied with no wheels, no axles and a bag of soon to be discovered sub-standard rubber bands

Everything fitted perfectly with regard to the model and indeed the hardware pack was excellent quality. The assembly book that comes with it is 40 pages long and really goes into every detail. I opted for a permanent glued and bolted tail assembly

as opposed to the removable assembly which I though was a bit prone to damage. All the measurements within the book were very precise.

A pity that Hobbykings measurements are not as precise. The length of the motor is not as advertised and I ended up with a gap between the cowl and the spinner, annoying but something to be fettled at a later date

Eventually the batteries came back in stock and I ordered 2 sets (4 in total) along with some XT connectors. On a previous model I had a nasty experience with connecting lipos up in series so these connectors would prevent this happening again (hopefully).

So everything was finished, batteries charged time to have a play in the garden to check power output. The timing was perfect, Mrs V asleep in the garden chair, time to spoil the peace. Stakes knocked in the lawn, everything connected up with my watt meter in series. Stand back and hold on to your skirt was the cry. The throttle range was set using the set up procedure. Gradual throttle was applied until confidence grew to apply full chaff as they say. My word the power was as expected 2.8kw pulling 64amps on full throttle. At this point Mrs V was shouting about something to do with hanging baskets and flower heads. I rightly assumed this was not a medical condition and turned everything off.

So first flight day arrived, controls checked out, CG checked OK. Taxi out turn into wind half throttle and airborne with ease. A couple clicks of trim here and there and we were sorted until about 3 minutes into the flight. A surging sound developed in the motor, a quick landing and a ground check highlighted nothing out of order. Another take off was executed and everything was fine until about 2 minutes again, the surge had returned. I landed again and took the plane back to the pits. A bit of head scratching took place, John Higgins said that it sounded like the ECS was cutting out due to overheating. A check of the ECS temperature took place at which point my finger stuck to the heatsink !!!! yes it was hot very hot.

A discussion was then had on the size of your aperture and air rushing through it (not a script from a carry on film). Not enough air was being had in the correct place.

Hanger 9 Valiant Review

July 2016

Article and pictures by Chris Vernon

I thought about how to cure the problem and came up with the idea of building some form of Ventura duct in the cowl to direct the air flow over the ECS (see photo). Of course as well as getting air in you need to give it chance get out so I enlarged the exit hole in the bottom of the engine bay.

Another test run in the garden took place and this time no apparent problem with overheating. Several flights have taken place now with no overheating issues. Full throttle takes the plane skyward at a rate of knots however the majority of the flight is best done at half throttle.

With regard to the substandard elastic bands on the undercarriage on the third flight the perished rubber gave way and the plane very gracefully slumped down on its belly. I discovered that Staples on the airport estate has a fantastic choice of rubber bands and there is an international standard for elastic band sizes. Try explaining to an assistant that you need the elastic bands for an undercarriage, it's not in his training module !!. Anyhow the replacement bands have been successful so far however I have purchased from a well-known auction site some 1/8" bungee/shock cord which I will fit at a later date.

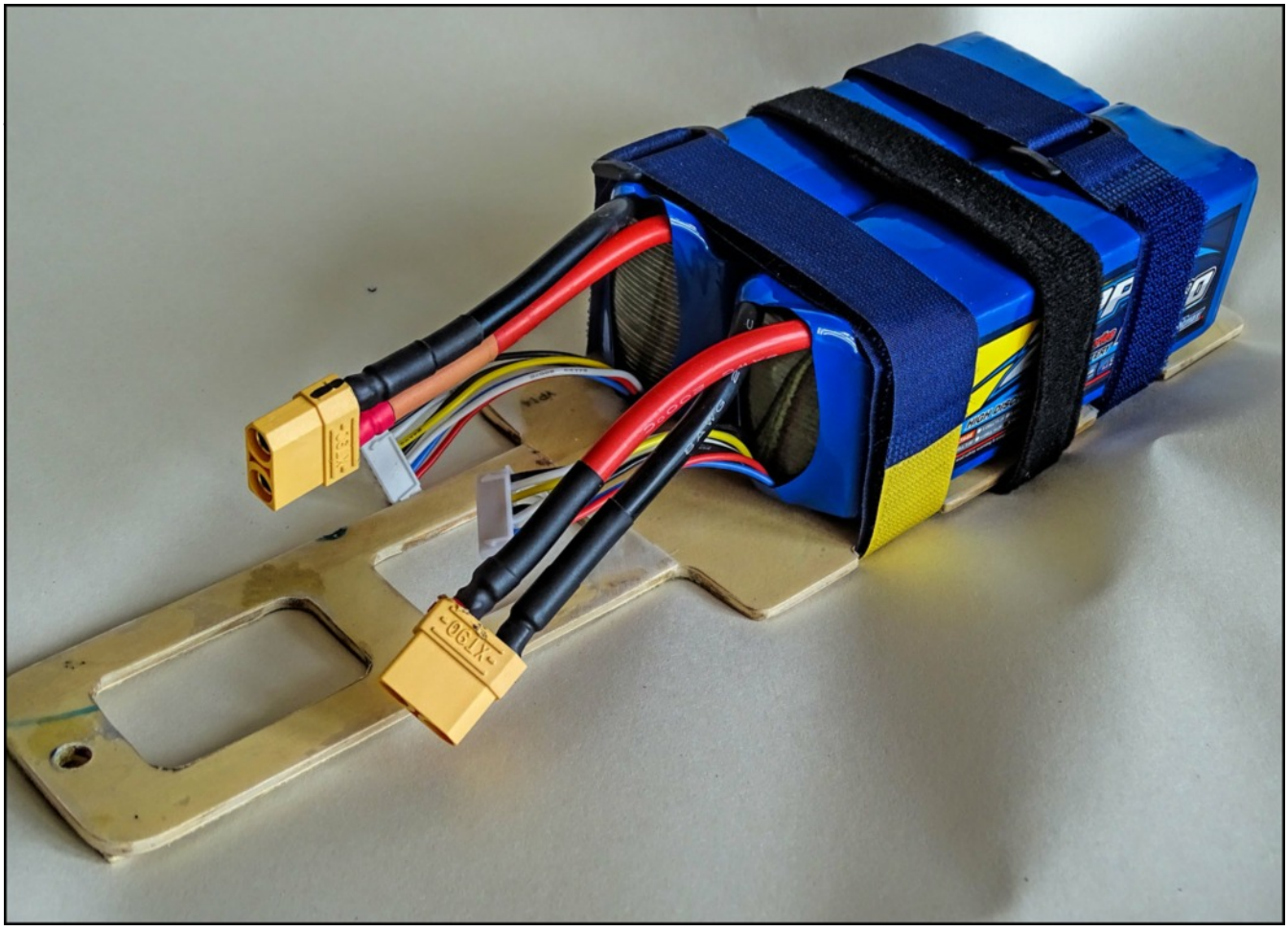
I have to say I really like flying the plane and it looks nice in the air. I am now in the process of adding some down trim when flaps are applied. I wish every time I do some form of setup like this I would write things down because I am back looking at you tube and forums on how to get into the correct menu on my transmitter. I could always use the manual but you have to go on you tube to work out how to use that !!

Hanger 9 Valiant Review

Article and pictures by Chris Vernon

So to summarise a really nice plane to look at and fly in my opinion, a more than adequate power set up, not everybody's cup of I know (electric) but it is what I have chosen to do.

The quality of the Hanger 9 kit (can you really call it a kit ??) is very good apart from a few issues with covering, a very tight wing tube fit into the wing, odd thread sizes and expensive optional extras (undercarriage, electric motor mount).



Flight - 1

July 2016

Article by Brian Holdsworth

Throughout recorded history, mankind has envied and tried to copy the ability of birds to travel through the air with impressive control and apparent ease. This is called flight and requires very specific conditions to be met.

For this purpose, the Laws of Motion may be summarised as stating that :- if the forces on a body are unbalanced, that body will experience acceleration and consequent motion away from the resultant force, and hence any motion will continue while the forces are balanced. "Inertia" is the term often used for the reluctance of a body to be accelerated and "Momentum" for its continued motion.

If a body is held above the ground, gravity exerts a downward force balanced by the upward supporting force. When released, the supporting force is removed, unbalancing the forces. Gravity remains, accelerating the body towards the ground producing increasing velocity so that its distance from the point of release increases at an increasing rate. This would continue indefinitely if the forces remain unchanged. However, as the velocity increases in an atmosphere, air resistance generates a force in the form of drag opposing the motion. The body reaches its maximum (terminal) velocity when drag equals gravity and the forces become balanced; drag is independent of mass but the gravitational force is proportional to the mass, so that terminal velocity increases with increasing mass for a particular body. Drag could be calculated from the characteristics of the body but this is very complex and, in practice, can only be approximated. Another change in forces would occur when the body reaches the ground and a large force is generated stopping further motion; in the context of aircraft this is a crash and, being undesirable, will not be considered further!

Items such as dandelion seeds are very light for their surface area giving a near-zero terminal velocity, so that they can remain airborne in air currents, travelling considerable distances but with no control over height or direction. Lighter-than-air balloons are filled with hot air or light gases such as hydrogen or helium making them weightless, so that they can remain airborne but with little control over height; direction and speed are determined by the wind; to carry the weight of the containing envelope and a payload, they need to be big. Adding propellers driven by engines allows more control over direction and speed but, to carry the considerable weight, they need to be huge, with internal supporting structures, and are known as airships, often larger than many ocean-going ships.

Flight - 1 Continued/…

Article by Brian Holdsworth

Heavier-than-air aircraft achieve controlled flight, with the potential for considerable agility and speed, by generating lift from the passage of air over the wings, and are more practical. In effect, lift cancels gravity and small lift variations allow climb and descent together with changes in direction. Early attempts were modelled on birds as the obvious example but experimentation and the application of science, together with materials development, transformed designs and performance. Aerodynamics is largely the study of aircraft performance including the generation of lift, stability, control responses and the minimisation of drag and other unwanted side-effects. Design is a compromise with improvements in one area incurring costs in other areas, so that successful designs are those which achieve a good balance for the intended capabilities.

An indication of the potential complexities involved may come from outlining what would be required to fully define the characteristics of a body in motion. These are generally defined with respect to the ground as a convenient fixed point within a context, usually a rectangular frame of reference requiring values in three axes such as X and Y to define horizontal position and Z for height. Different contexts may be used for various purposes with the parameters resolved into the new context which can be quite complex in itself. The body position may thus be defined by three values, similarly for its velocity and acceleration along the three axes. The body has an attitude defined by three angles (pitch, roll and yaw for aircraft) with respect to the context with rotational velocities and accelerations. The ground reference is on this planet (Earth) which is a rotating oblate spheroid (a ball flattened at the poles) so that perceived straight and level motion needs to be curved to allow for the Earth's curvature and rotation. Gravity has a considerable effect and, while usually considered fixed in a vertical direction towards the centre of the Earth, actually varies in magnitude and direction with height, position over the planetary surface and proximity to mountains etc; the gravitational influence of the Sun, Moon and planets, particularly Jupiter, may also become significant, varying with relative orbital positions. Within the atmosphere, airflow over the body and air currents (wind and turbulence) have considerable effects, especially for an aircraft with its complex shape, varying with velocities and attitude, together with air density variations from altitude, temperature, humidity and weather systems such as Low/High pressure areas etc. Surface irregularities and local variations in airflow can be very significant and require definition. Even the ground reference is not fixed since it rises and falls with tides and the gravitational influence of the Sun, Moon and planets. At very high speeds, relativistic

effects can become relevant. Ultimately, the Earth is in a wobbling, eccentric orbit round the Sun which is orbiting within the Galaxy which is moving in the Universe...! Many parameters interact in a non-linear fashion requiring more parameters to determine their relationships. As the required accuracy is increased, greater precision is needed in parameter derivation and interaction, with more parameters becoming significant, so that it rapidly becomes unmanageable. As sometimes described as Chaos Theory, results can be sensitive to even tiny changes. Whew! Fortunately, for purposes such as this, the vast majority of this complexity can be ignored and useful results obtained by identifying effects without needing to quantify them.

The GPS satellites used for SatNav include empirically derived corrections (fitting a curve, and hence an equation, to measurements) for the effects of most of the above, where the tenuous atmosphere at orbital height and the erratic solar wind have significant varying effects. These corrections are updated every few days or after a solar storm to maintain their impressive accuracy.

Several theories claim to explain lift but none are complete - famously, they "prove" that bumble bees cannot fly which contradicts observation! Equations are available to derive some aircraft performance parameters under restricted conditions and can give useful results, but usage outside those restrictions can be very misleading. These equations are derived empirically; flight simulators use them and can give some useful results but are very approximate - in particular, scale effect and the effects of wind are largely ignored, though these can be of great significance to the model flyer.

For most purposes, it may be assumed that lift is generated if the path taken by the airflow over a body is longer on one side than the other. On the longer path, the air has to travel faster meaning that the pressure is reduced generating a pulling force. Similarly, the air on the shorter path travels slower with increased pressure generating a pushing force. Within limits, lift is proportional to airspeed squared and the difference between the paths. Irregularities disturb the airflow so that a smooth shape, minimising sudden changes in the path of the airflow, will improve performance. These considerations determine the cross-sectional shape of a wing, generally referred to as the wing section or airfoil. Small changes in airflow have significant effects upon performance, particularly at various airspeeds, so that thousands of airfoils are available with each claiming advantages under specific conditions.

Flight - 1 Continued/…

Article by Brian Holdsworth

Only a few of those airfoils are suitable for model applications where benign stall characteristics are desirable, if not essential. The symmetrical NACA0012, NACA0015 etc and the semi-symmetrical NACA2412 perform well for powered aircraft. Eppler E374 is popular for aerobatic slope soarers and Eppler E193 and E205 for thermal soarers. Specialized sections such as the Selig series are often used for gliders, but are sensitive to tiny section shape errors reducing potential performance - their stall behaviour is generally more violent than that of the Eppler types which can be a problem.

Jake rides again with his new Canon at Weston Park

That is one lovely shot!

All Pictures by Jake Reid

Social Calendar/Shows for 2016

TRAINING NIGHTS

These are <u>every</u> Wednesday evening from May 11th onwards till September at the field so if you wish to, either learn, or just brush up those skills prior to taking your 'A', (or 'B') - this is a good time to do it. The winds seem to subside as the evening develops. It's a great time to fly.

List of our instructors.

Jason Reid, John Higgins, Chris Vernon, Brian Holdsworth, Jim Sheldon, Paul Cusworth, Andy Harrison, Lee Connor, Justin Goldstone & John Proth

SHOWS

13th - 14th August **Elvington LMA**

In Conclusion

Well guys, that's your lot for this month. As ever I sincerely thank you all who have contributed to this newsletter. JP for his olde worlde remembrances, Chris Vernon's fascinating review of his Valiant, our beloved Will Sparrow, Brian's in depth informative article on flight and those brilliant pictures by Jake. Just one thing Jake - please make it look just a bit more difficult to take good photos PLEASE !! Roll on Elvington. In the meantime - enjoy your flying and avoid those vertical landings - you know it makes sense.